Water Quality Assessment Report

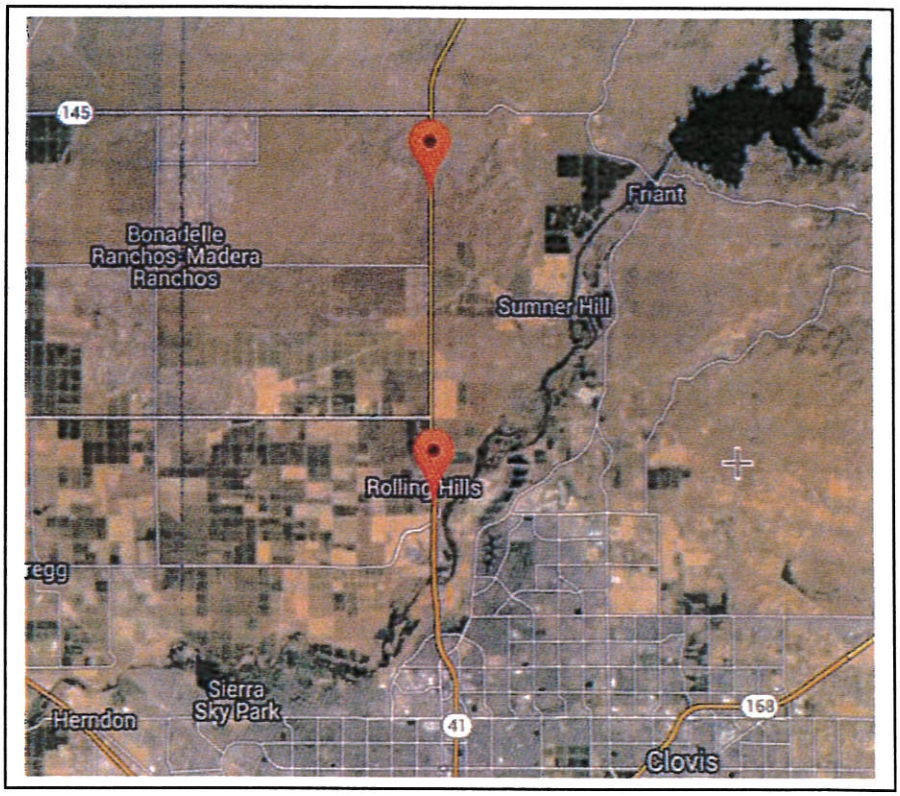
Madera 41 South Expressway Project

State Route 41

Madera County, California

6-MAD-41-PM 1.5/7.6

PROJECT ID 0613000309



January 7, 2016

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Objectives

The purpose of the Water Quality Assessment Report (WQAR) is to evaluate potential impacts of the proposed project on water quality, fulfill the requirements of the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA), and provide information, to the extent possible, for the National Pollution Discharge Elimination System (NPDES) permitting process. The WQAR includes a discussion of the proposed project, the physical setting of the project area, and the regulatory framework with respect to water quality. The WQAR also provides data on surface water and groundwater resources within the project area and the quality of these waters. This report describes water quality impairments and beneficial uses, identifies potential water quality impacts and benefits associated with the proposed project, and recommends avoidance and/or minimization measures for potentially adverse impacts.

Project Description

The California Department of Transportation, in cooperation with the County of Madera, proposes to improve 6.1 miles of State Route 41 from 0.8 mile south of the Avenue 11 Undercrossing to 1.4 miles north of Avenue 15 (post miles R1.5/7.6) in eastern Madera County (See Figure 1). The proposed project would construct a divided four-lane expressway south of Avenue 12 mostly within the existing right-of-way that could be expanded to an 8-lane freeway between Children's Boulevard (Avenue 10) and Avenue 12. North of Avenue 12, the proposed project would construct a divided four-lane expressway with controlled access.

Two build alternatives and a no build alternative are under consideration. Both build alternatives include another structure over Avenue 11 (undercrossing), new crossings (culvert bridges) at the Madera Canal and Lateral 6.2, frontage roads, and controlled access. All intersections would be at grade (ground level) but would preserve enough right-of-way for future freeway interchanges at Avenues 12 and 15, including about 0.5 mile of transition improvements to Avenue 15. The no Build Alternative would keep State Route 41 in its existing condition and routine maintenance projects would continue.

Alternative 2, also known as the East Alignment, constructs a freeway mostly within the existing state right-of-way south of Avenue 12 and an expressway on existing and new alignment north of Avenue 12. The expressway alignment curves roughly to the west of the existing State Route 41 north of Avenue 12, curves east across the existing State Route 41 and Lateral 6.2 (canal) south of Avenue 14, and continues north roughly 600 feet to the east side of the existing State Route 41 at Avenue 15. After crossing the Madera Canal the alignment turns to the west and transitions back into the existing State Route 41.

Alternative 4, also known as the Existing Alignment, constructs a freeway south of Avenue 12 and an expressway north of Avenue 12. The new alignment would mostly use the existing highway corridor and right-of-way by constructing the expressway on the west side of the existing State Route 41 until transitioning back into the existing State Route 41 north of the Madera Canal. Avenue 15 would be realigned to the north slightly to connect with the local road proposed for planned residential development.

Figure 1 Project Location Map

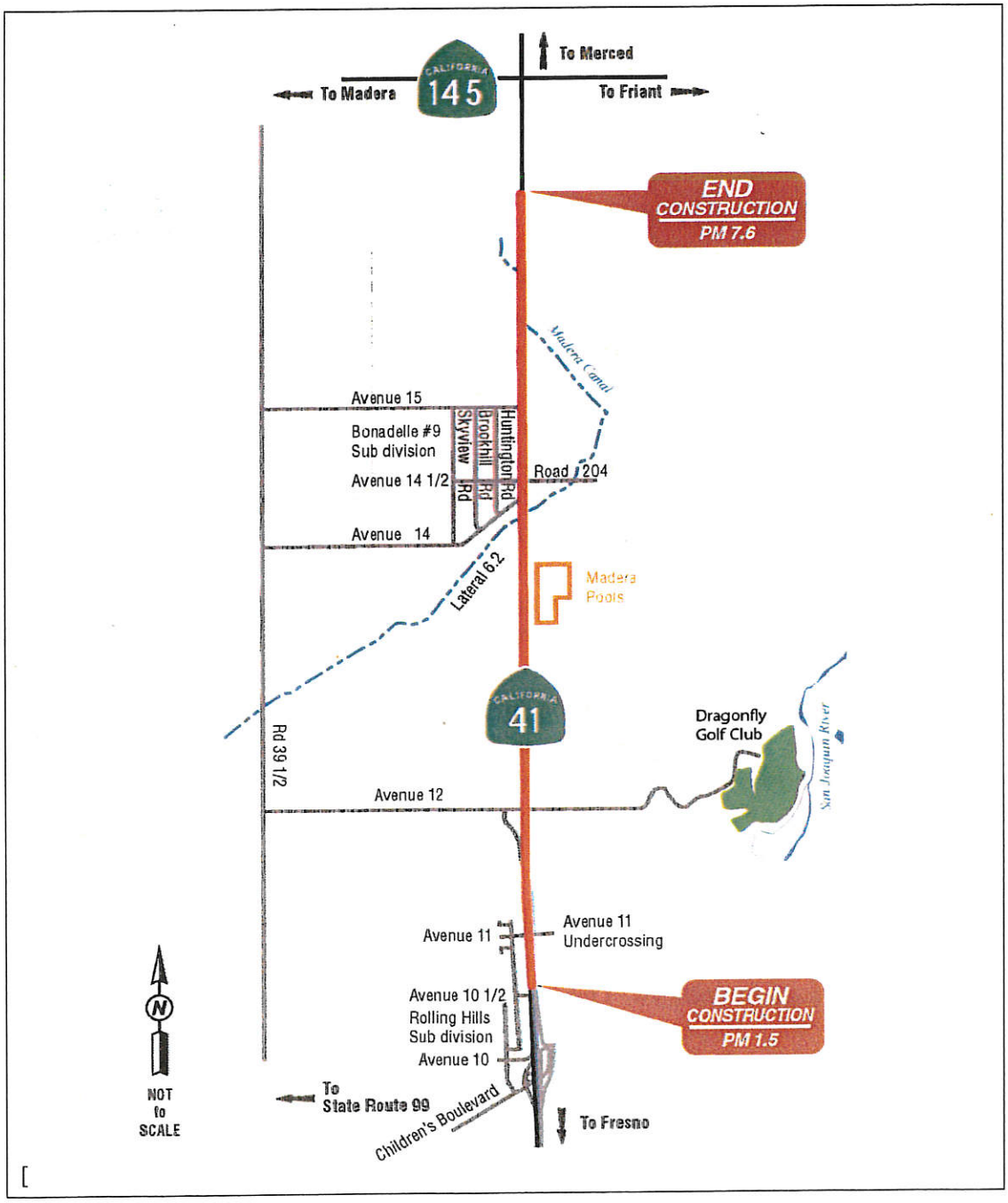


Figure 2 - Project Vicinity Map

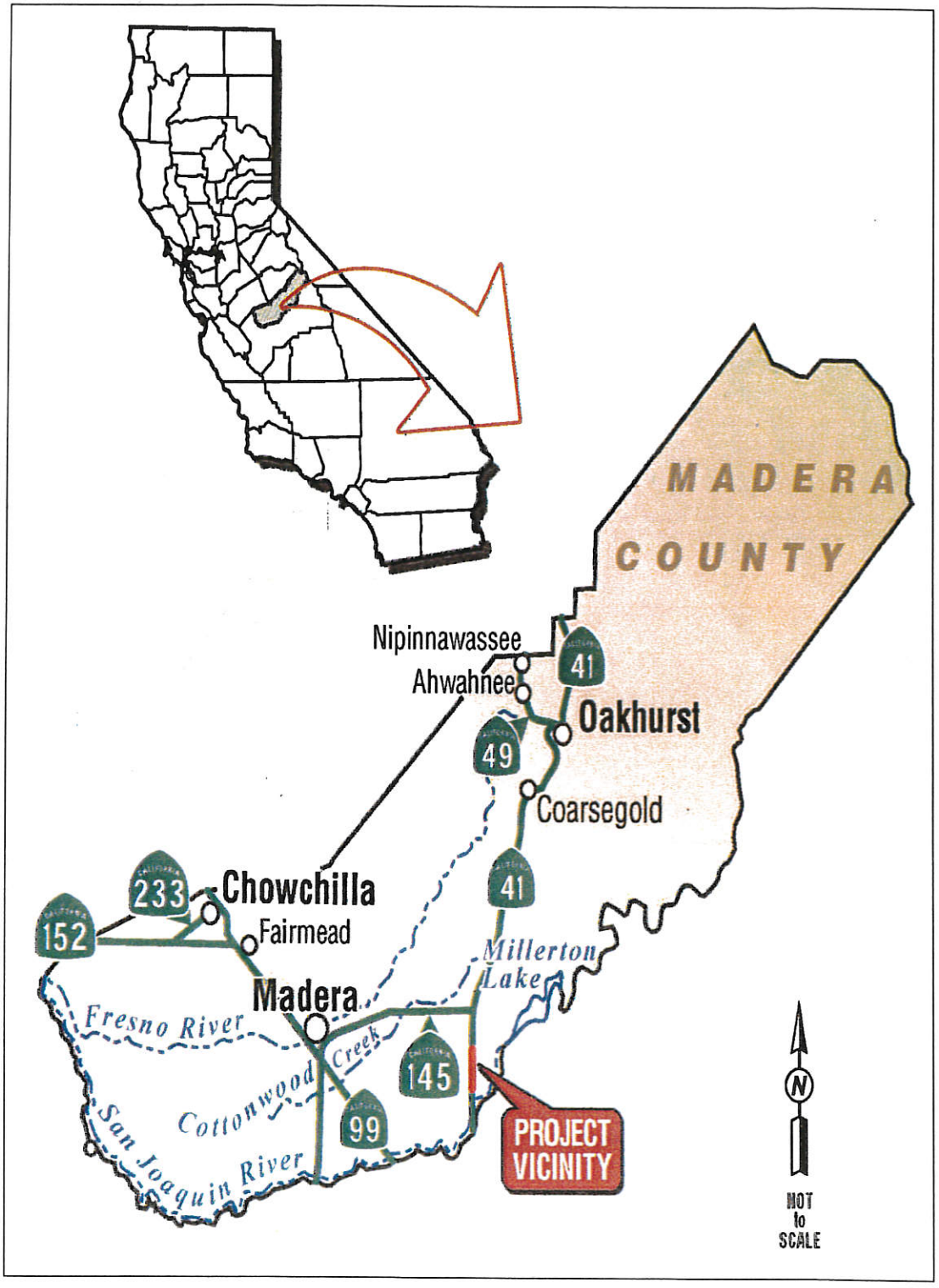
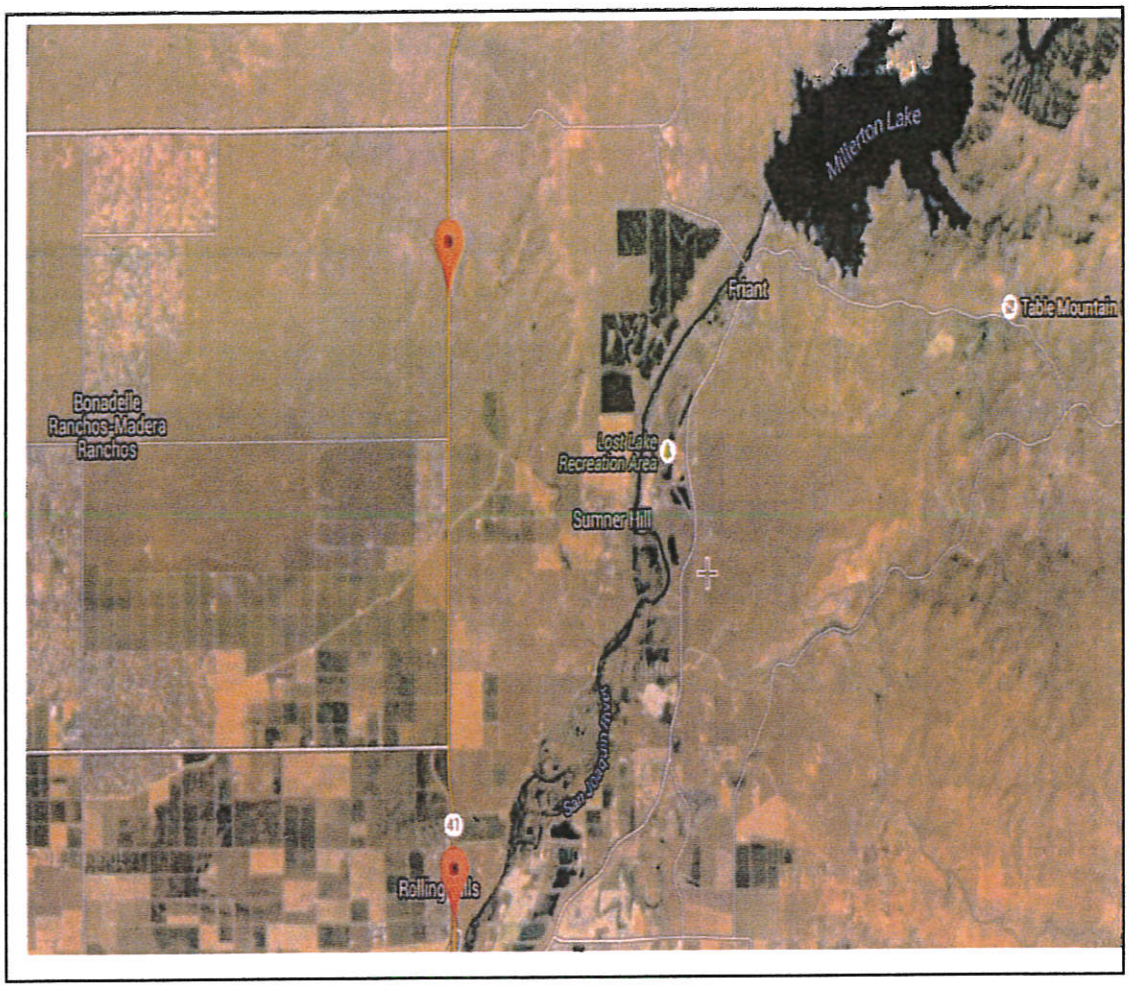


Figure 3 Aerial Photo of the Project Area.



Approach to Water Quality Assessment Report

The WQAR was prepared by reviewing existing topographic data from the United States Geological Survey (USGS), erosion and climate data from the United States Department of Agriculture Natural Resources Conservation Service (NRCS) Web,Soil Survey (WSS), and hydrology and surface streams information from the Federal Emergency Management Agency (FEMA) *Flood Insurance Study* (FIS) and *Flood Insurance Rate Map* (FIRM). This report discusses the following:

- Regulatory Setting – Includes an overview of federal, state, and local regulations.

- Affected Environment – Includes an overview of geography, topography, and geology; a discussion of regional water quality objectives for the affected water body; and a description of the existing water quality of the affected water body.

- Environmental Consequences – Addresses potential short-term construction and long-term operational effects of the project on area water quality, including an assessment of site-specific and cumulative impacts.

- Avoidance and Minimization Measures – Recommends measures to avoid or minimize potentially significant water quality impacts as a result of the project.

REGULATORY SETTING

Federal Requirements: Clean Water Act.

In 1972 Congress amended the Federal Water Pollution Control Act, making the addition of pollutants to the waters of the United States (U.S.) from any point source unlawful unless the discharge is in compliance with a National Pollutant Discharge Elimination System (NPDES) permit. Known today as the Clean Water Act (CWA), Congress has amended it several times. In the 1987 amendments, Congress directed dischargers of storm water from municipal and industrial/construction point sources to comply with the NPDES permit scheme. Important CWA sections are:

- Sections 303 and 304 require states to promulgate water quality standards, criteria, and guidelines.

- Section 401 requires an applicant for a federal license or permit to conduct any activity, which may result in a discharge to waters of the U.S. to obtain certification from the State that the discharge will comply with other provisions of the act.

- Section 402 establishes the NPDES, a permitting system for the discharges (except for dredge or fill material) of any pollutant into waters of the U.S. Regional Water Quality Control Boards (RWQCB) administer this permitting program in California. Section 402(p) requires permits for discharges of storm water from industrial/construction and municipal separate storm sewer systems (MS4s).

- Section 404 establishes a permit program for the discharge of dredge or fill material into waters of the United States. This permit program is administered by the U.S. Army Corps of Engineers (USACE).

The objective of the CWA is "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters."

USACE issues two types of 404 permits: Standard and General permits. There are two types of General permits, Regional permits and Nationwide permits. Regional permits are issued for a general category of activities when they are similar in nature and

cause minimal environmental effect. Nationwide permits are issued to authorize a variety of minor project activities with no more than minimal effects.

There are two types of Standard permits: Individual permits and Letters of Permission. Ordinarily, projects that do not meet the criteria for a Nationwide Permit may be permitted under one of USACE's Standard permits. For Standard permits, the USACE decision to approve is based on compliance with U.S. EPA's Section 404 (b)(1) Guidelines (U.S. EPA CFR 40 Part 230), and whether permit approval is in the public interest. The Section 404(b)(1) Guidelines were developed by the U.S. EPA in conjunction with USACE, and allow the discharge of dredged or fill material into the aquatic system (waters of the U.S.) only if there is no practicable alternative which would have less adverse effects. The Guidelines state that USACE may not issue a permit if there is a least environmentally damaging practicable alternative (LEDPA), to the proposed discharge that would have lesser effects on waters of the U.S., and not have any other significant adverse environmental consequences. Per Guidelines, documentation is needed that a sequence of avoidance, minimization, and compensation measures has been followed, in that order. The Guidelines also restrict permitting activities that violate water quality or toxic effluent standards, jeopardize the continued existence of listed species, violate marine sanctuary protections, or cause "significant degradation" to waters of the U.S. In addition every permit from the USACE, even if not subject to the Section 404(b)(1) Guidelines, must meet general requirements.

State Requirements: Porter-Cologne Water Quality Control Act

California's Porter-Cologne Act, enacted in 1969, provides the legal basis for water quality regulation within California. This Act requires a "Report of Waste Discharge" for any discharge of waste (liquid, solid, or gaseous) to land or surface waters that may impair beneficial uses for surface and/or groundwater of the State. It predates the CWA and regulates discharges to waters of the State. Waters of the State include more than just Waters of the U.S., like groundwater and surface waters not considered Waters of the U.S. Additionally, it prohibits discharges of "waste" as defined and this definition is broader than the CWA definition of "pollutant". Discharges under the Porter-Cologne Act are permitted by Waste Discharge Requirements (WDRs) and may be required even when the discharge is already permitted or exempt under the CWA.

The State Water Resources Control Board (SWRCB) and RWQCBs are responsible for establishing the water quality standards (objectives and beneficial uses) required by the CWA, and regulating discharges to ensure compliance with the water quality standards. Details regarding water quality standards in a project area are contained in the applicable RWQCB Basin Plan. States designate beneficial uses for all water body segments, and then set criteria necessary to protect these uses. Consequently, the water quality standards developed for particular water segments are based on the

designated use and vary depending on such use. In addition, each state identifies waters failing to meet standards for specific pollutants, which are then state-listed in accordance with CWA Section 303(d). If a state determines that waters are impaired for one or more constituents and the standards cannot be met through point source controls, the CWA requires the establishment of Total Maximum Daily Loads (TMDLs). TMDLs specify allowable pollutant loads from all sources (point, non-point, and natural) for a given watershed.

State Water Resources Control Board and Regional Water Quality Control Boards

The SWRCB administers water rights, water pollution control, and water quality functions throughout the state. RWCQBs are responsible for protecting beneficial uses of water resources within their regional jurisdiction using planning, permitting, and enforcement authorities to meet this responsibility.

National Pollution Discharge Elimination System (NPDES) Program

Section 402(p) of the CWA requires the issuance of NPDES permits for five categories of storm water dischargers, including Municipal Separate Storm Sewer Systems (MS4s). The U.S. EPA defines an MS4 as any conveyance or system of conveyances (roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, human-made channels, and storm drains) owned or operated by a state, city, town, county, or other public body having jurisdiction over storm water, that are designed or used for collecting or conveying storm water. The SWRCB has identified the Department as an owner/operator of an MS4 by the SWRCB. This permit covers all Department rights-of-way, properties, facilities, and activities in the state. The SWRCB or the RWQCB issues NPDES permits for five years, and permit requirements remain active until a new permit has been adopted.

The Department's MS4 Permit, under revision at the time of this update, contains three basic requirements:

1. The Department must comply with the requirements of the Construction General Permit (see below);

2. The Department must implement a year-round program in all parts of the State to effectively control storm water and non-storm water discharges; and

3. The Department storm water discharges must meet water quality standards through implementation of permanent and temporary (construction) Best Management Practices (BMPs) and other measures.

To comply with the permit, the Department developed the Statewide Storm Water Management Plan (SWMP) to address storm water pollution controls related to

highway planning, design, construction, and maintenance activities throughout California. The SWMP assigns responsibilities within the Department for implementing storm water management procedures and practices as well as training, public education and participation, monitoring and research, program evaluation, and reporting activities. The SWMP describes the minimum procedures and practices the Department uses to reduce pollutants in storm water and non-storm water discharges. It outlines procedures and responsibilities for protecting water quality, including the selection and implementation of Best Management Practices (BMPs). The proposed Project will be programmed to follow the guidelines and procedures outlined in the latest SWMP to address storm water runoff.

Part of and appended to the SWMP is the Storm Water Data Report (SWDR) and its associated checklists. The SWDR documents the relevant storm water design decisions made regarding project compliance with the MS4 NPDES permit. The preliminary information in the SWDR prepared during the Project Initiation Document (PID) phase will be reviewed, updated, confirmed, and if required, revised in the SWDR prepared for the later phases of the project. The information contained in the SWDR may be used to make more informed decisions regarding the selection of BMPs and/or recommended avoidance, minimization, or mitigation measures to address water quality impacts.

Construction General Permit

Construction General Permit (Order No. 2009-009-DWQ, as amended by 2010-0014-DWG), adopted on November 16, 2010, became effective on February 14, 2011, regulates storm water discharges from construction sites which result in a Disturbed Soil Area (DSA) of one acre or greater, and/or are smaller sites that are part of a larger common plan of development. By law, all storm water discharges associated with construction activity where clearing, grading, and excavation results in soil disturbance of at least one acre must comply with the provisions of the General Construction Permit. Construction activity that results in soil disturbances of less than one acre is subject to this Construction General Permit if there is potential for significant water quality impairment resulting from the activity as determined by the RWQCB. Operators of regulated construction sites are required to develop storm water pollution prevention plans; to implement sediment, erosion, and pollution prevention control measures; and to obtain coverage under the Construction General Permit.

The Construction General Permit separates projects into Risk Levels 1, 2, or 3. Risk levels are determined during the planning and design phases, and are based on potential erosion and transport to receiving waters. Requirements apply according to the Risk Level determined. For example, a Risk Level 3 (highest risk) project would require compulsory storm water runoff pH and turbidity monitoring, and before

construction and after construction aquatic biological assessments during specified seasonal windows. For all projects subject to the permit, applicants are required to develop and implement an effective Storm Water Pollution Prevention Plan (SWPPP). In accordance with the Department's Standard Specifications, a Water Pollution Control Plan (WPCP) is necessary for projects with DSA less than one acre.

Section 401 Permitting

Under Section 401 of the CWA, any project requiring a federal license or permit that may result in a discharge to a water body must obtain a 401 Certification, which certifies that the project will be in compliance with State water quality standards. The most common federal permits triggering 401 Certification are CWA Section 404 permits issued by USACE. The 401 permit certifications are obtained from the appropriate RWQCB, dependent on the project location, and are required before USACE issues a 404 permit. In some cases the RWQCB may have specific concerns with discharges associated with a project. As a result, the RWQCB may issue a set of requirements known as Waste Discharge Requirements (WDRs) under the State Water Code that define activities, such as the inclusion of specific features, effluent limitations, monitoring, and plan submittals that are to be implemented for protecting or benefiting water quality. WDRs can be issued to address both permanent and temporary discharges of a project.

AFFECTED ENVIRONMENT

Topography

The north portion of the project is next to Little Table Mountain range to the east. Northeast of the Madera Canal, contoured mound-like grassland, composed of alluvium, gravel and hardpan sit at the foot of steep ridged rocky side slopes. Lands between the Madera Canal and Avenue 15 are southwest sloping grasslands, with some rocky outcrops, composed of old terrace soils. Elevation ranges from 450 feet above sea level at the north portion of the project to 375 feet above sea level near the south portion of the project.

The project area south of the Avenue 15 is primarily flat agricultural and urbanized lands with the Lateral 6.2 and Root Creek as the primary hydrologic features. Due to the large amount of agriculture within the project study area, and the south sloping contour of the landscape, several roadside ditch features lie along SR-41 within the project study boundaries. These features serve as water diversion and support agricultural run-off.

Precipitation and Climate

The climate in the area is classified as warm temperate climate with dry summers (Kottek, 2006). The average annual high temperature is 75.6°F, and the average annual low temperature is 46°F. (usclimatedata.com). The yearly temperature range is from a low of 36°F in December to a high of 95°F in July. The average annual precipitation is 12.25 inches. The overall condition of the site is flat open grassland with hillsides to the east.

Regional Geology

The project area is located along the boundary between the San Joaquin Valley on the east and the Diablo Range on the west. The San Joaquin Valley is a topographic and structural trough, which has received a thick accumulation of sediments from the Sierra Nevada on the east and the Coast Ranges on the west. The alluvium and sedimentary rocks on the east side of the valley are bounded by the Sierra Nevada fault block to the east. The formations range from horizontal to gently dipping westward, and lie unconformably over the granite basement rocks of the Sierra Nevada. The West Side of the valley dips steeply to the east at its extreme western boundary along the base of the folded and faulted Coast Ranges, which are composed of ultramafic intrusives and grayish green graywackes (sandstones) of the Franciscan Formation. On the east side of the Coast Ranges, the Franciscan Formation is overlain by marine sedimentary rocks of the Great Valley Sequence (GVS). On the valley floor and adjacent foothills, the GVS is overlain by the nonmarine Tulare Formation.

Regional Hydrology

The project lies within the San Joaquin Valley Floor/Berenda Creek HSA (545.30) and the Ahwahnee/Daulton HSA (539.20). The San Joaquin River is located about two miles south of the southern project limit. Within the project limits, Little Dry Creek and its tributaries, and the Madera Canal cross State Route 41 at various locations and may be impacted by the project under several of the build alternatives.

The primary hydrologic features of the project study area are the Madera Canal that crosses the north portion of the study area and the Lateral 6.2, which diverts from the Madera Canal south of Avenue 15, then extends southwest.

Also, two ephemeral drainages course through the north and south portions of the project. Root Creek, flows from the foothills of the Sierra Nevada Mountains, then drains southwest, crossing SR-41 below Avenue 12, terminating in agricultural fields.

The Friant-Madera Canal is connected to the San Joaquin River in the Sierra Nevada where the Friant Dam is located, and periodically provides downstream releases to meet requirements for downstream water storage.

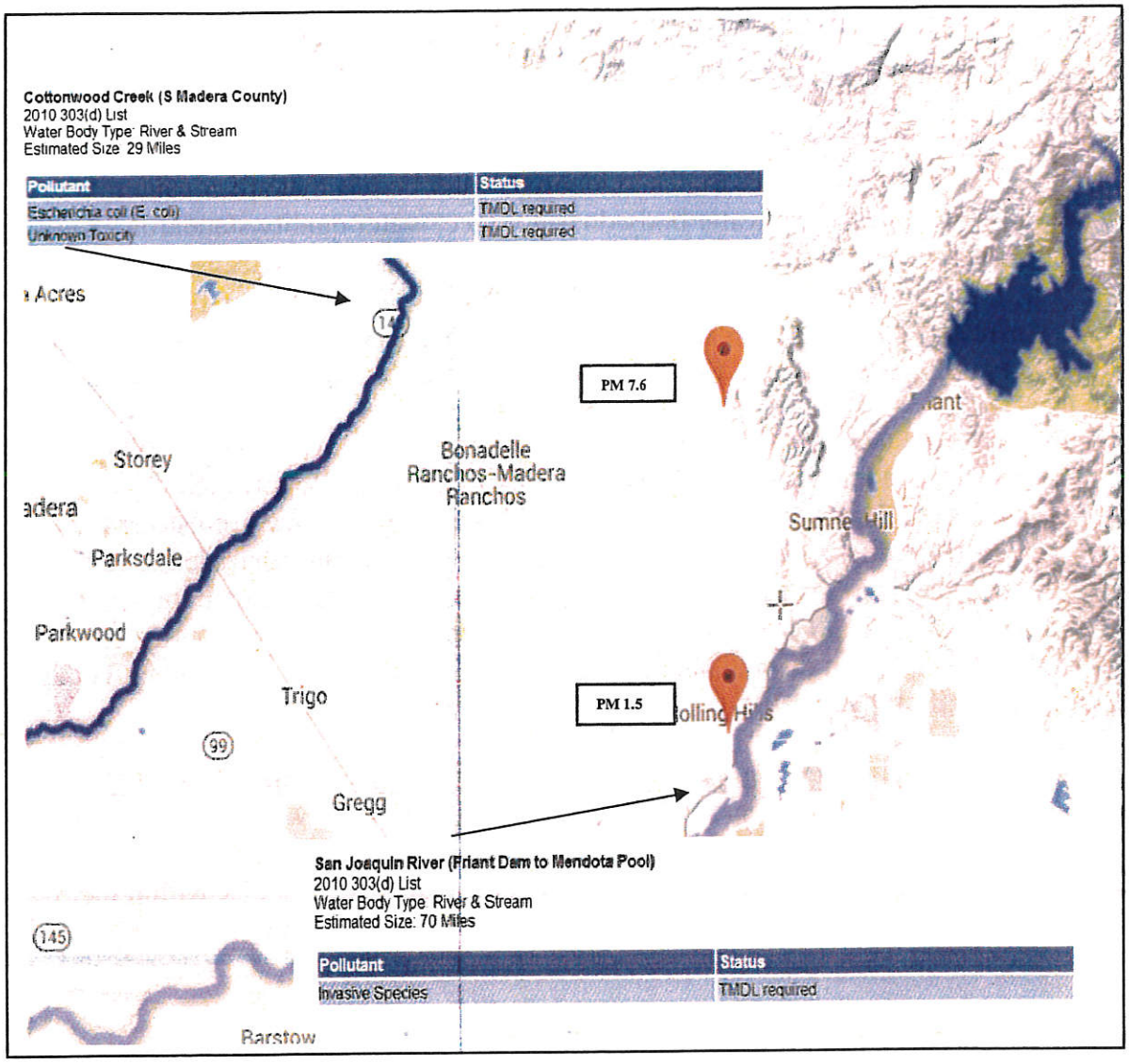
Surface Water Quality

The Clean Water Act requires States to identify water bodies that are considered impaired, which means the water body does not meet water quality standards. States must then place these water bodies onto a list, referred to as the "Clean Water Act Section 303(d) List of Water Quality Limited Segments." On October 11, 2011, the U.S. Environmental Protection Agency issued its final decision regarding the water bodies and pollutants added to California's 303(d) List.

This list, referred to as the California 2010 Integrated Report, replaces the 2006 California Clean Water Act 303(d) List. The 2010 Integrated Report includes a combined list of Clean Water Act Section 303(d) water bodies that are listed as not meeting water quality standards and Section 305(b) water bodies that identifies water bodies still requiring the development of a Total Maximum Daily Load, those that have a completed Total Maximum Daily Load approved by U.S. Environmental Protection Agency, and those that are being addressed by actions other than a Total Maximum Daily Load (SWRCB 2011a) (Figure 4).

There are no 303(d) receiving water bodies within the project limits. However, Cottonwood Creek and the San Joaquin River are 303(d) listed water bodies located in close proximity. Cottonwood Creek is listed for E. coli and unknown toxicity. The San Joaquin River is listed for exotic fish. Generally the water quality within the San Joaquin River (Friant Dam to Mendota Pool) is moderate to good.

Figure 4. Project Area Map Showing EPAs 303 (d) listed Water Bodies.

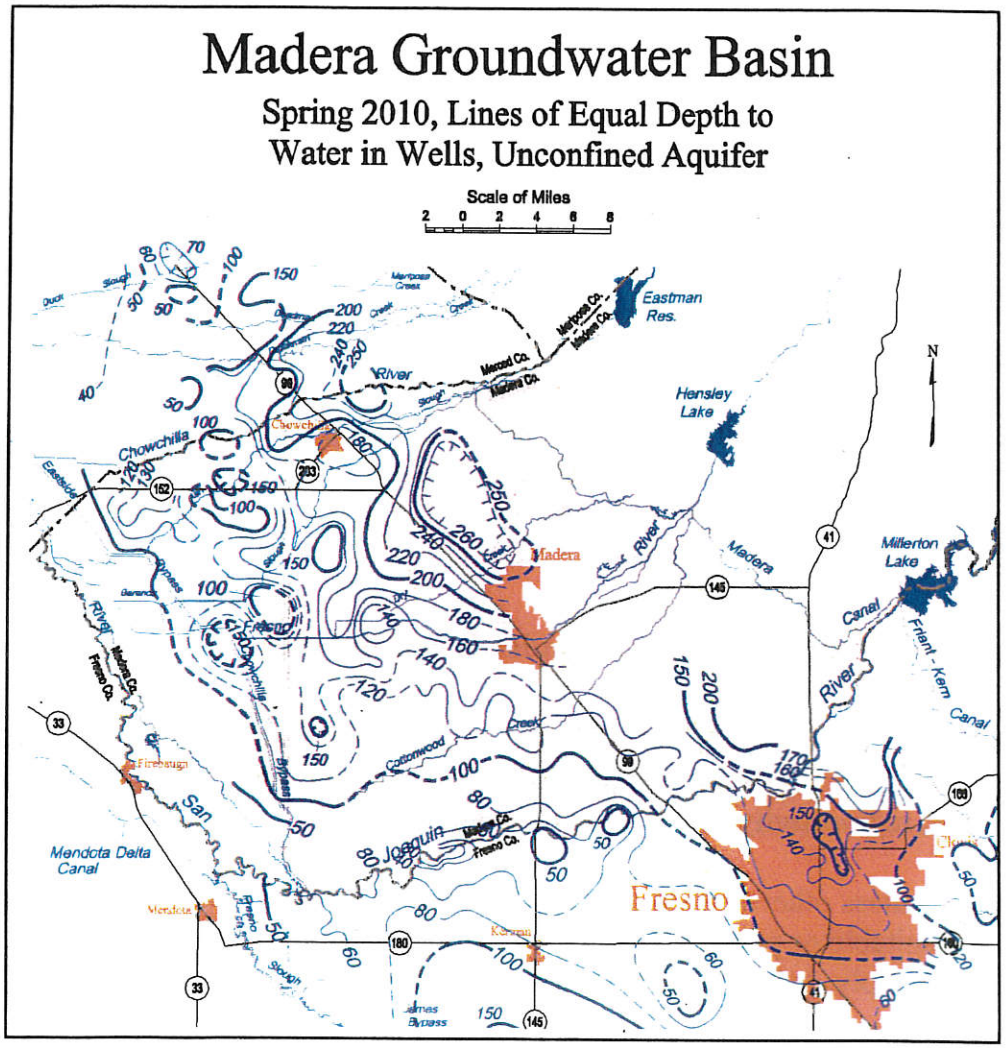


Groundwater Hydrology

The project is located in the Madera Groundwater sub-basin. Groundwater generally follows the structural surface of the underlying bedrock in the western portion of the project site and flows toward the valley floor to the West. Groundwater near the valley floor flows generally northwest toward the Delta and the San Joaquin River. Regionally groundwater occurs in fractured basement rocks, and locally in shallow alluvial aquifers. The Tulare Formation, comprised of water-bearing sands and gravels of moderate permeability, is separated into upper and lower zones by the Corcoran Clay. The upper zone is characterized by lower groundwater yields than the lower zone and is subject to intrusion by delta water. The lower zone is generally encountered at a depth of 90 to 210 meters (300 to 700 feet) and is sealed off from the

intrusion of surface waters by the Corcoran Clay. As a result, groundwater quality is better in the lower zone of the Tulare Formation. Locally, groundwater is of moderate to good quality. Groundwater at the site is shallow ranging from 20 feet to 60 feet below ground surface (Figure 5)

Figure 5. Madera Groundwater Basin Contour Map



Groundwater Quality

Groundwater quality conditions in the San Joaquin River Region vary throughout the area. Groundwater quality parameters are discussed below for the San Joaquin River Region, and sources and reasons for concerns associated with these parameters are listed. The discussion is limited to parameters that are associated with regional problems.

The groundwater is predominantly of bicarbonate type. The major cations are calcium, magnesium, and sodium. Sodium appears higher in the western portion of the subbasin where some chloride waters are also found (Page and LeBlanc 1969).

Page and LeBlanc (1969) noted that the Total Dissolved Solids (TDS) of groundwater in the Fresno area seldom exceeds 600 mg/L although at greater depths, 2,000 mg/L groundwater has been encountered.

Dibromochloropropane (DBCP), a soil fumigant nematicide, and nitrates can be found in groundwater along the eastern side of the subbasin. Shallow brackish groundwater can be found along the western portion of the subbasin. Elevated concentrations of fluoride, boron, and sodium can be found in localized areas of the subbasin. Most groundwater contamination sites are small and seldom affect water quality supplies on a regional basis. These sites may require cessation of pumping from one or two water supply wells, or the installation of wellhead treatment.

Surface Water Quality Objectives/standards and Beneficial Uses

Central Valley Regional Water Quality Control Board (RWQCB) has established water quality objectives for the protection of surface and groundwater in the region. Water quality objectives consist of both narrative and numerical goals, and are established to preserve past, present and probable future beneficial uses of regional water bodies. These uses are Municipal and Domestic Supply (MUN), Water Contact Recreation (REC-1), Non-contact Water Recreation (REC-2), Cold Freshwater Habitat (COLD), Warm Freshwater Habitat (WARM).

Groundwater Quality Objectives/standards and Beneficial Uses

The Central Valley RWQCB Basin Plan identifies water quality objectives that apply to all groundwaters in the San Joaquin River basin, including bacteria, chemical constituents, radioactivity, tastes and odors, and toxicity.

In addition, unless otherwise stated, all groundwaters in the Central Valley Region are considered suitable or potentially suitable for municipal and domestic supply, agricultural supply, industrial service supply, and industrial process supply.

Areas of Special Biological Significance (ASBS)

There are 34 ocean areas monitored and maintained for water quality by the State Water Resources Control Board. ASBS cover much of the length of California's coastal waters. They support an unusual variety of aquatic life, and often host unique individual species. ASBS are basic building blocks for a sustainable, resilient coastal environment and economy. There are no Areas of Special Biological Significance (ASBS) in the Central Valley Region. Hence, there are no ASBS in the Project vicinity.

Environmental Consequences

The project activities have the potential of having short term water quality impacts. No long term water quality impacts are anticipated.

There is no 303(d) receiving water bodies within the project limits. However, Cottonwood Creek and the San Joaquin River are 303(d) listed water bodies located in close proximity. Cottonwood Creek is listed for E. coli and unknown toxicity. The San Joaquin River is listed for exotic species.

No Drinking Water Reservoirs and/or Recharge Facilities have been identified within the project limits. There are no known RWQCB special requirements or concerns with this project. No TMDLs have been identified with any water bodies in the area. The project soil erosion risk level was determined using the Individual Method - EPA Rainfall Erosion Calculator and Individual Data per Caltrans Project Risk Level Determination Guidance, July 2010. The project risk level has been determined to be Risk Level 1.

The total Disturbed Soil Area (DSA) for the adopted alignment is approximately 370 acres. The total DSA was calculated by summing the area of disturbed soil from R/W line to R/W line, including those areas required to construct local roads.

The existing impervious (solid) surface area is 40 acres. There will be a net new impervious surface area of 65 acres after completion of construction of the preferred alternative. This project does not lie within an urban MS4 area. This project will not involve reuse of soil containing Aerially Deposited Lead (ADL).

The existing highway through this area is typically a two lane road with paved shoulders. Most stormwater runoff sheet flows off the roadway and into side storage ditches or adjacent farmland or rangeland. The proposed freeway would increase to a 6 lane roadway with 10-foot shoulders and a wide median. Side ditches and small drainage basins are proposed to store stormwater run-off. The side ditches and drainage basins will be designed with sufficient capacity to store two 10-year/24-hour storm events.

All stormwater runoff from the main roadway will likely discharge to side storage ditches. However, small drainage basins may be required at proposed intersections. The drainage profiles will be further evaluated during the PA/ED phase. There is a significant potential for increased sediment loading with this project. However, all stormwater runoff is proposed to be captured and stored

within the State's R/W. The permanent erosion control strategy (plants, soils, mulch, blankets, establishment periods, etc.) will be completed during the PA/ED phase. However, since this area is typically sparse of vegetation, it is anticipated that native plants and grasses will be utilized to stabilize the slopes and prevent erosion.

Currently all stormwater runoff sheet flows to side storage ditches or to open rangeland or farmland. This project proposes to construct side storage ditches to capture sheet flow from the roadway. However, at intersections, it may be required to use dike and down drains to discharge runoff to small drainage basins or ditches adjacent to the roadway. Measures for avoiding or reducing potential stormwater impacts will be dependent on which build alternative is chosen. Further evaluation will be completed during the PS&E phase. There are no known existing Treatment BMPs within the project limits.

Potential Impacts to Water Quality

This discussion examines the biological, physical/chemical, and human use constituents to determine whether the discharge of storm water from the proposed project would cause or contribute to the violation of water quality objectives and if the proposed project would have the potential to affect the beneficial use of the water bodies within the project limits. Construction activities were evaluated for the potential to affect surface water quality because of uncontrolled runoff and discharges. These included accidental releases of construction-related hazardous materials, ground disturbance and associated erosion and sedimentation, storm water discharges, and dewatering discharges, particularly in locations within or close to a surface water body. Project maintenance and operation activities were reviewed for the potential to introduce pollutants into the environment, with a particular focus on storm water runoff.

The project will increase the impervious area within the project limits. Additional impervious areas proposed for the project may increase the volume and velocity of the stormwater drainage. This increase will be accounted for and mitigated through the use of BMPs. Increased flows should have a negligible impact on downstream flow. Efforts to mitigate the increases in velocity and volume will include treatment BMPs. The intent of these mitigation measures is for post-construction flows to equal pre-construction flows.

Anticipated changes to the Physical/Chemical Characteristics of the Aquatic Environment.

Construction of the proposed project has the potential to contribute pollutants to receiving water bodies. These pollutants include sediment and silt, associated with soil disturbance because of construction activities, and chemical pollutants associated with the construction materials that are brought onto the project site.

Soil disturbance activities include earth-moving activities such as excavation and trenching, soil compaction and moving, cut and fill activities, and grading. Disturbed soils are susceptible to high rates of erosion from wind and rain, resulting in sediment transport via storm water runoff from the project area. Chemical contaminants, such as oils, fuels, paints, solvents, nutrients, trace metals, and hydrocarbons, can attach to sediment and be transported to downstream drainages and ultimately into collecting waterways contributing to the chemical degradation of water quality. Some pollutants can create turbidity in water bodies, which blocks light transmission and penetration, reduces oxygen levels, affects the food chain, and creates changes in water temperature.

Construction materials, waste handling, and the use of construction equipment could also result in storm water contamination and affect water quality. Spills or leaks from heavy equipment and machinery can result in oil and grease contamination. The removal of waste materials during construction could also result in tracking of dust and debris. Staging areas can also be sources of pollutants because of the use of paints, solvents, cleaning agents, and metals during construction. Pesticide use, including herbicides, fungicides, and rodenticides, associated with site preparation is another potential source of storm water contamination. Larger pollutants, such as trash, debris, and organic matter, could also be associated with construction activities. As such, the discharge of storm water may cause or threaten to cause violations of water quality objectives. These pollutants would occur in both the storm water discharges and non-storm water discharges and could potentially cause chemical degradation and aquatic toxicity in the receiving waters.

Short Term Impacts During Construction

Construction of the Project has the potential to affect water quality. Potential pollutant sources associated with the construction phase of the proposed project include construction activities and materials expected at the project site. In addition, fueling or maintenance of construction vehicles may occur within the Project site during construction, so there is risk of accidental spills or releases of fuels, oils, or other potentially toxic materials. Table 1 displays potential pollutant sources, along with their associated pollutant typical for transportation infrastructure construction sites.

Table 1 Construction Site Activities, Materials, and Associated Pollutants

Construction Site Activity	Construction Site Materials	Pollutant
Vehicle and Equipment Cleaning, Fueling, and Maintenance	Vehicle Fluids	Oil Grease Petroleum Coolants
Concrete Cement Operations and Concrete Waste Management	Portland Concrete Cement and Masonry Products	Portland Concrete Cement
		Masonry Products
		Sealant (Methyl Methacrylate)
		Incinerator Bottom Ash Bottom Ash Steel Slag Foundry Sand Fly Ash
		Mortar Concrete Rinse Water
	Curing Compounds	Non-Pigmented Curing Compounds
Landscaping	Landscaping and Other Products	Aluminum Sulfate
		Sulfur-Elemental
		Fertilizers-Inorganic
		Fertilizers-Organic
		Natural Earth (Sand Gravel and Topsoil)
		Herbicide
		Pesticide
		Lime
Excavation and Grading	Contaminated Soil	Aerially Deposited Lead
		Petroleum

Source: California Department of Transportation 2003a.

LongTerm Impacts During Operation and Maintenance.

Operation of the Project has the potential to affect water quality. Potential pollutant sources associated with operation of the proposed project include motor vehicles, highway maintenance, illegal dumping, spills, and landscaping care. Table 2 displays potential pollutant sources, along with their associated pollutant typically associated with transportation infrastructure operations.

Table 2 Transportation Infrastructure Operation Pollutant Sources and Pollutants

Pollutant Source	Pollutant
Motor Vehicles	Oil
	Grease
	Petroleum
	Coolants
	Nitrite
	Metals
Highway Maintenance	Asphalt
	Sediment
	Mineralized Organic Matter
	Thermoplastics
	Treated Wood
	Tree/Shrub Clippings
Landscaping	Aluminum Sulfate
	Sulfur-Elemental
	Fertilizers-Inorganic
	Fertilizers-Organic
	Natural Earth (Sand Gravel and Topsoil)
	Herbicide
	Pesticide
	Lime
Illegal Dumping	Trash
	Oil/Grease
Spills	Includes Hazardous and Non-Hazardous Chemicals

Source: Caltrans 2003a.

Impact Assessment Methodology

Potential short-term impacts were analyzed by determining the amount of disturbed soil area for the project. Potential long-term impacts were analyzed by determining the proposed additional impervious surface area for the project. Impacts to surface and groundwater quality from the discharge of highway runoff were analyzed by comparing water quality objectives with average storm water runoff concentration from Department highways.

Implementation of the Storm Water Pollution Prevention Plan is expected to attenuate and minimize the amount of soil released from the construction site. Short-term impacts caused by the build alternative include potential increases in sediment loads because of disturbance of soil during construction. The temporary residual increase in sediment loads from construction areas is unlikely to alter the hydrologic response (i.e., erosion and deposition) downstream in the hydrologic sub-area and, subsequently, the sediment processes in these areas would be reduced because all

disturbed soil areas would be stabilized before completion of the construction project with permanent landscaping and/or permanent erosion control measures; therefore, with incorporation of temporary and permanent best management practices, no adverse impacts are expected with implementation of the this project.

Cumulative Impacts

Cumulative impacts are those that result from the past, present, and reasonably foreseeable future actions combined with the impacts of this Project. A cumulative effects assessment looks collectively at the impacts posed by individual land use projects. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time. Land use activities can degrade habitat and species diversity through consequences such as displacement and fragmentation of habitats and populations, alteration of hydrology, contamination by pesticides and herbicides, erosion, sedimentation, disruption of migration corridors, changes in water quality, and introduction or promotion of predators. Routine Caltrans maintenance activities will continue in this area however these activities should have little effect on the cumulative effects on wildlife and habitats in the area since maintenance activities are to the roadways and shoulders.

The goal of the Project would be to minimize impacts to the maximum extent practicable. Increase in impervious surface area resulting from future development may also adversely affect water quality by increasing the amount of storm water runoff, transportation-related pollutants, and associated targeted design constituents entering the storm drain system; however, new development would have to comply with existing regulations regarding construction practices that minimize risks of erosion and runoff. Among the various regulations that are the applicable to the project are the provisions of the Department's Statewide National Pollutant Discharge Elimination System Permit; County and municipal codes related to control of storm water quality for new development and significant redevelopment, roads and highways, and public works projects; municipal grading permits; and other National Pollutant Discharge Elimination System permits. This would minimize degradation of water quality at individual project construction sites. Consequently, cumulative water quality impacts would be minimized during the construction and operational phases. Compliance with applicable State Water Resources Control Board and Regional Water Quality Control Board regulations would ensure that water quality is maintained to the maximum extent practicable for potential development projects within the hydrologic sub-area; therefore, there would be no water quality impacts associated with implementation of this Project, and the proposed project would not have a cumulatively considerable contribution to the cumulative effects related to water quality.

AVOIDANCE AND MINIMIZATION MEASURES

The Project would have less than significant impacts to water quality with the following avoidance, minimization, and proposed mitigation measures incorporated. There are no 303(d) listed water bodies within the project limits.

Since greater than 1.0 acre, is estimated to be disturbed, a Stormwater Pollution Prevention Plan (SWPPP) will be required, under Caltrans' Statewide Permit. The SWPPP required by Caltrans will include the Construction Site Best Management Practices (BMPs) addressing good housekeeping and non-storm water management which set the minimum standards for protection of water quality. Measures to avoid and reduce potential impacts to water quality in the construction area will be specified in the SWPPP.

The following avoidance and minimization measures are recommended to minimize short-term construction and long-term operational water quality impacts associated with implementation of the project:

- This project is not required to consider permanent treatment since there are no direct discharges to any receiving waters and all stormwater runoff will be contained within storage ditches or basins within State's R/W.

A Storm Water Pollution Prevention Plan (SWPPP) is required for this project. The SWPPP will be developed by the contractor and submitted to the Caltrans Resident Engineer for review and acceptance prior to the start of construction. The SWPPP will incorporate applicable Temporary Construction Site Best Management Practices (BMPs) within the project limits.

The following temporary Construction Site BMPs line items are proposed to be incorporated into the project:

- No dewatering will be required during the construction of this project. However, it is possible that some construction work may require crossing or working within Little Dry Creek. Further evaluation to determine is water diversion is necessary will be done during the next project phase.
- No active treatment systems (ATS) will be used for this site, or portions thereof.
- The project activities shall conform to the requirements of the National Pollutant Discharge Elimination System (NPDES) General Construction Permit, Waste Discharge Requirements for Discharges of Stormwater Runoff Associated with Construction Activity" (Final Order No. 2012-011-DWQ, NPDES No. CAS000003) and any subsequent General Permit in effect at the time of project construction. This permit authorizes storm water and

authorized non-storm water discharges from Caltrans construction properties, facilities, and activities and would be required prior to commencement of the construction phase of the project. As part of this permit requirement, a SWPPP (following guidance in the current version of the Caltrans Stormwater Pollution Prevention Plan) shall be prepared in accordance with Caltrans 2010 Standard Specification Section 13.1 - Water Pollution Control prior to construction consistent with the requirements of the RWQCB. The SWPPP will incorporate all applicable BMPs to ensure that adequate measures are taken during construction to minimize water quality impacts.

- Erosion control measures shall be implemented during construction of the proposed project. These measures shall conform to the provisions in Section 21 - Erosion Control of the Caltrans Standard Specifications and the special provisions included in the contract for the project. Such provisions shall include the preparation of a Storm Water Pollution Prevention Plan, which describes and illustrates placement of Best Management Practices (BMPs) within the project site.
- Suitable BMPs, such as silt fences, straw wattles, or catch basins, shall be placed below all construction activities at the edge of surface water features to intercept sediment before it reaches the waterway. These structures shall be installed prior to any clearing or grading activities.
- All disturbed areas would be restored to pre-construction contours.
- Construction specifications shall include the following measures to minimize the potential for adverse effects resulting from accidental spills of pollutants (e.g., fuel, oil, grease):
- A site-specific spill prevention plan shall be implemented for potentially hazardous materials. The plan shall include the proper handling and storage of all potentially hazardous materials, as well as the proper procedures for cleaning up and reporting any spills. If necessary, containment berms shall be constructed to prevent spilled materials from reaching surface water features.
- Equipment and hazardous materials shall be stored a minimum of 50 feet away from surface water features.
- Vehicles and equipment used during construction shall receive proper and timely maintenance to reduce the potential for mechanical breakdowns leading to a spill of materials. Maintenance and fueling shall be conducted in an area at least 50 feet away from surface water features or within an adequate fueling containment area.